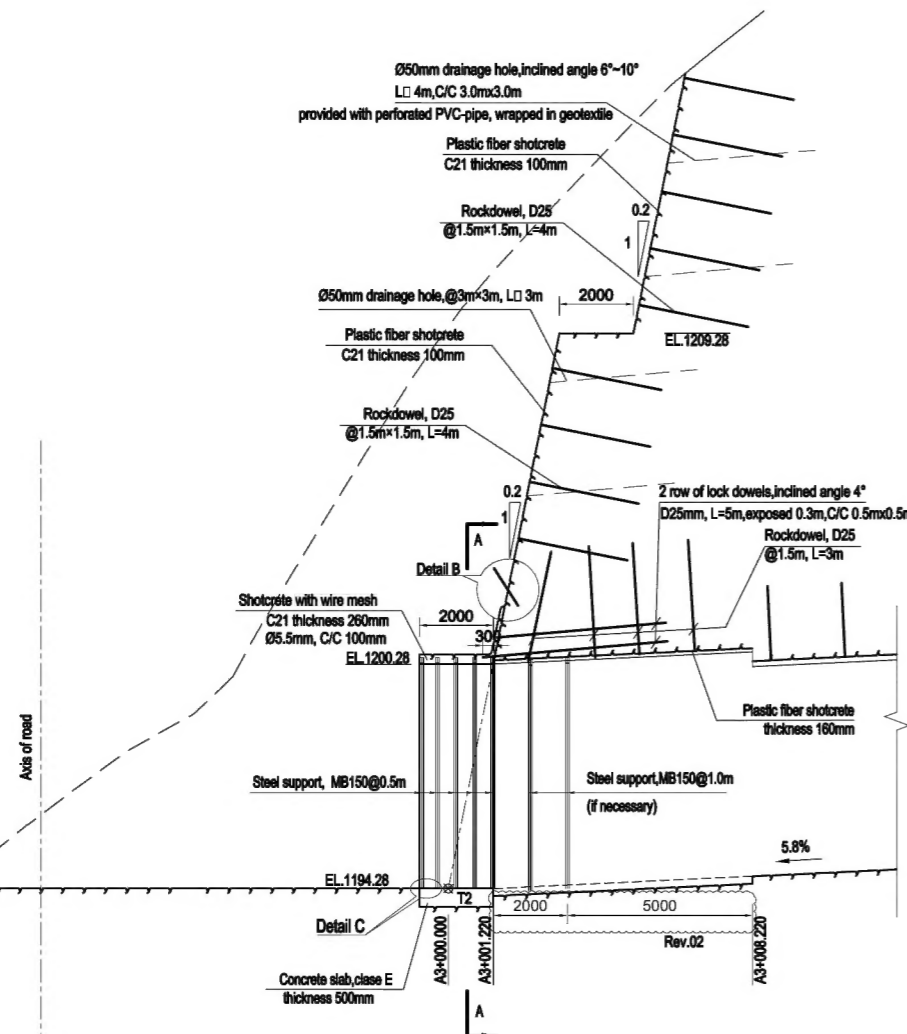
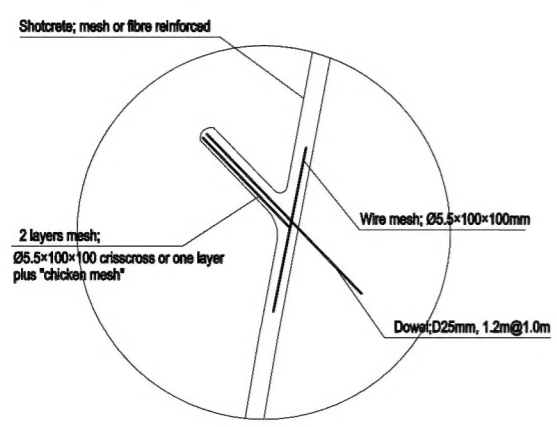


Detail A

SCALE: 1:100

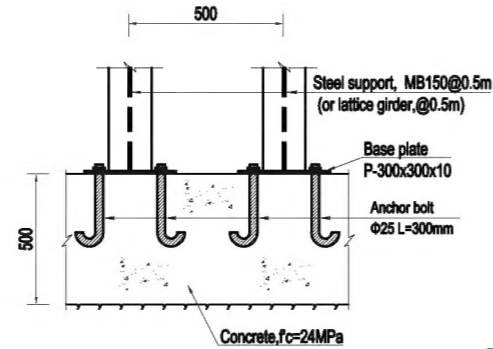


Detail B



DETAIL C

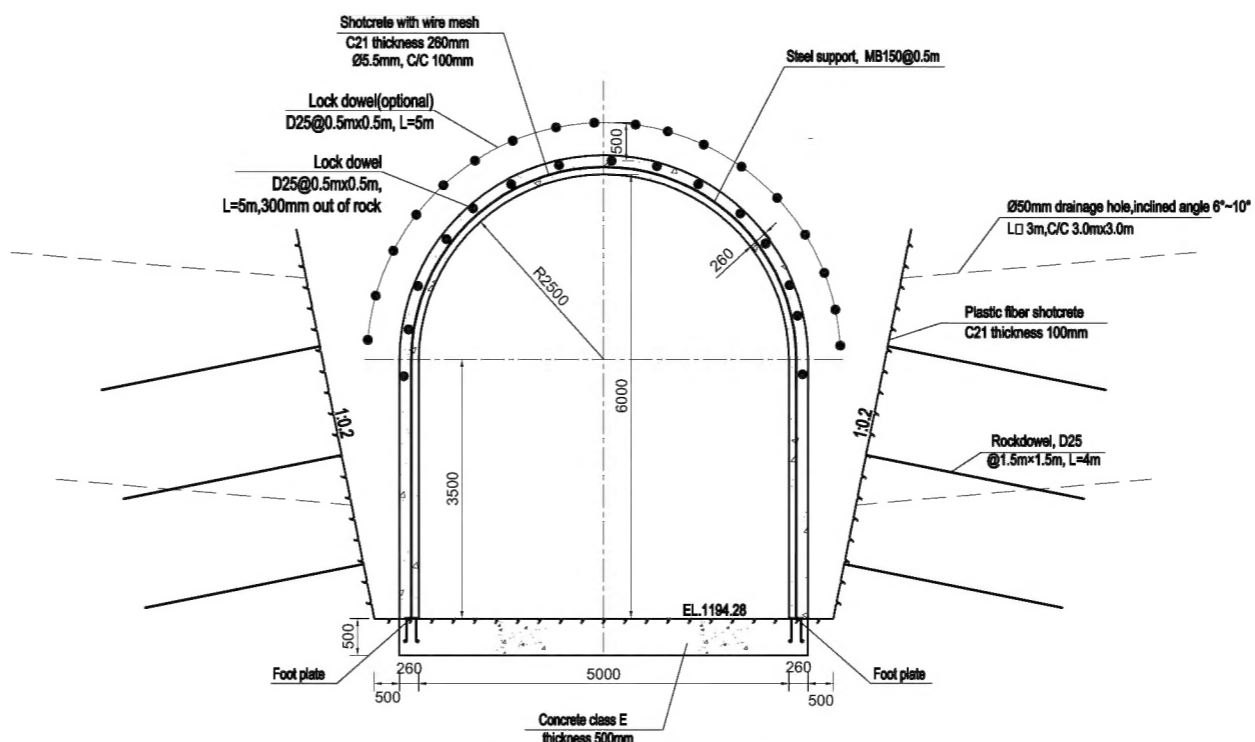
SCALE: 1:50



SCHEMATIC DIAGRAM OF OPEN TUNNEL

(SECTION A-A)

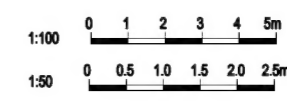
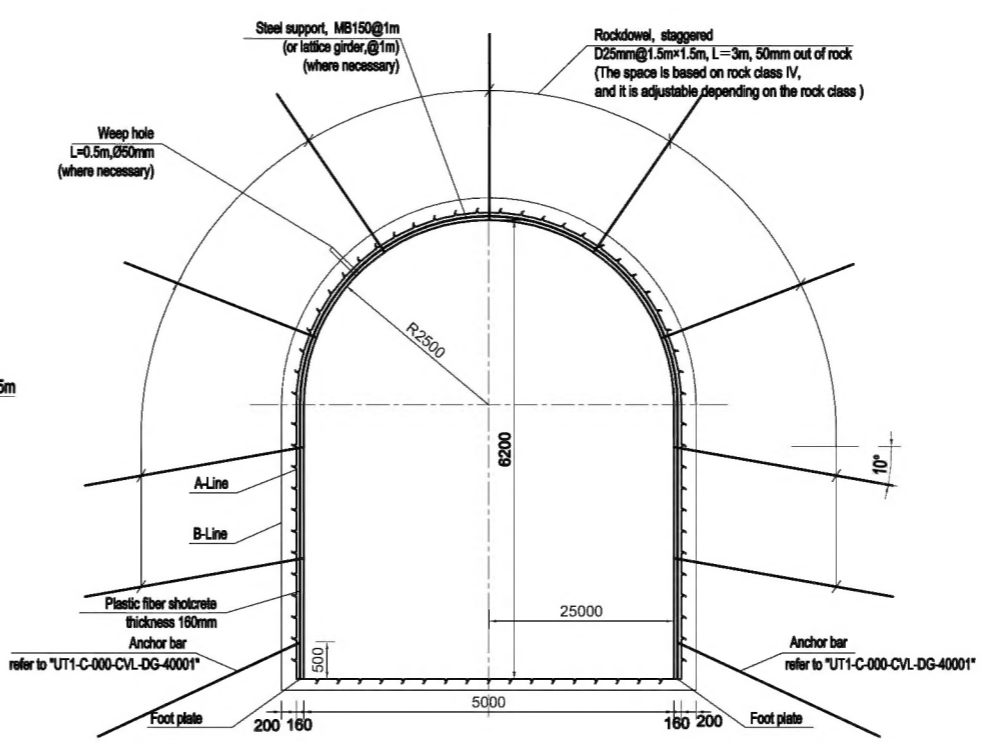
SCALE 1:50



SUPPORT TYPE OF TUNNEL ENTRANCE SECTION

(A3+001.220~A3+008.220)

SCALE 1:50



NOTE

- 1.The coordinates, chainages & elevations are measured in meters, all dimensions are in millimeters unless otherwise stated.
- 2.Symbol description:
A-Line is the design excavation line.
B-Line is the overbreak line.
R-denotes round bar, yield strength of the round bar is 280MPa.
D-denotes deformed bar, yield strength of the deformed bar is 500 MPa;
- 3.Strength specification of concrete & shotcrete:
(1) Concrete class E: Cylinder specified compressive strength 24MPa at 28 days.
(2) Shotcrete: Cylinder specified compressive strength 25MPa at 28 days unless the slope of the portal, and 1 day aged shotcrete shall have strength above 10MPa as per contract.
- 4.Other notes see sheet 1.

REFERENCE DRAWINGS

UT1-C-150-CVL-DG-43002	Surrounding Rock Stability Calculation of Adit NO.3
UT1-C-000-CVL-DG-40001	Detailed Design Drawing of Excavation and Support for Underground
UT1-C-845-CVL-DG-70005	Layout Drawing of Monitoring for Adit No.3
UT1-C-150-CVL-DG-43009	Drawing of construction adit NO.3 plugging

SYMBOL AND LEGEND

FOR CONSTRUCTION

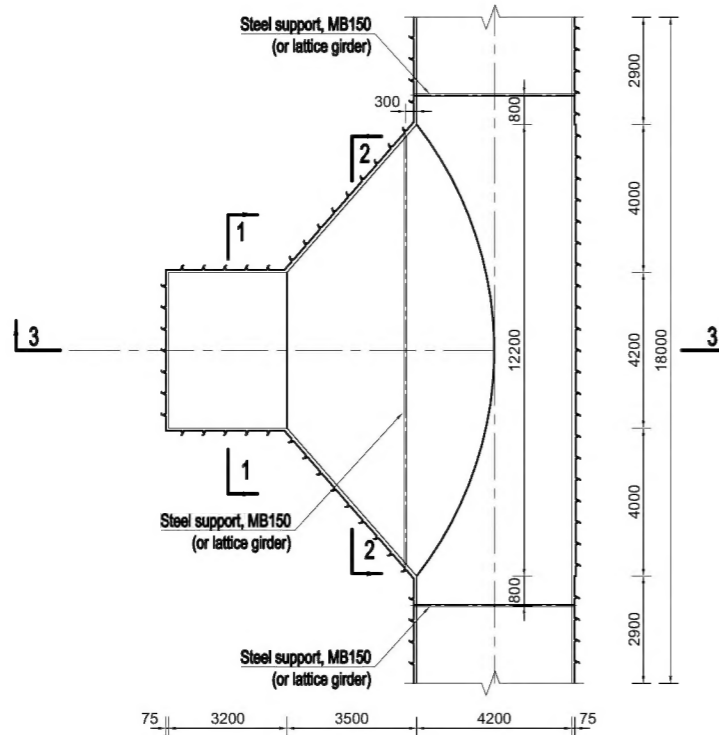
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02	25.MAY.2022	AS RN-0054	DONG Z.Z.	Lei Y.G.	Han J.B.
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00	25.MAY. 2021	FIRST ISSUE	DONG Z.Z.	Lei Y.G.	Han J.B.

PROJECT TITLE					
Upper Trishuli-1 HEP (216MW)					
OWNER					
NWEDC NATURAL WATER AND ENERGY DEVELOPMENT CO. (P) LTD.					
OWNER'S ENGINEER					
TRACTEBEL CHINA jade CONSULT					
CONTRACTOR					
DOOSAN Enerbility					
DRAWING TITLE					
EXCAVATION AND INITIAL SUPPORT DRAWINGS OF ADIT NO.3 (2/5)					
DRAWING NUMBER					
UT1-C-150-CVL-DG-43004-2					
SHEET NO.					
2 OF 5					
REV. NO.					
02					

PLAN OF TURNING ADIT (ROCK CLASS III)

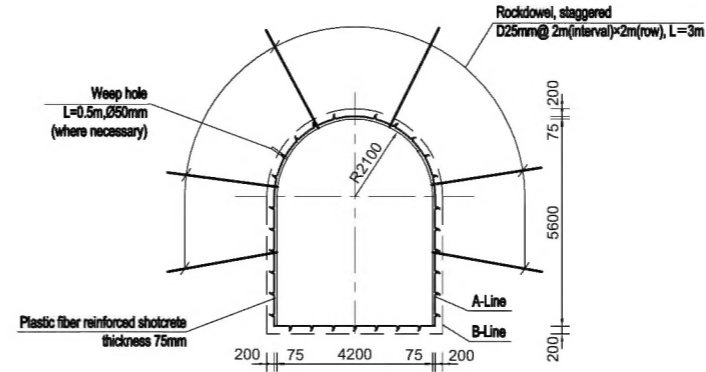
SCALE 1:100



Note: The steel ribs at the start and end of the turning bay are only required in Class III, IV.

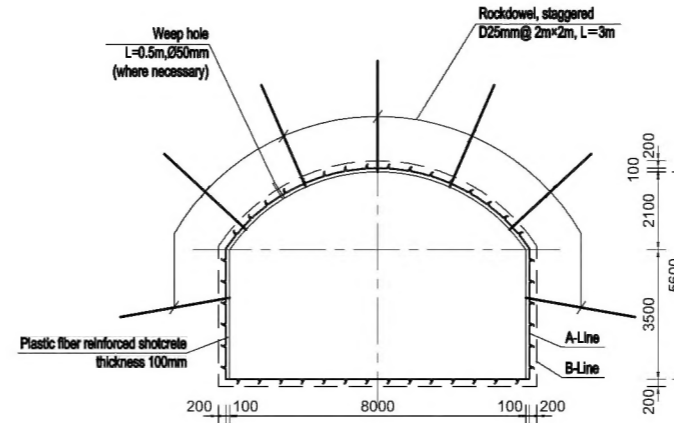
SECTION 1-1

SCALE 1:100



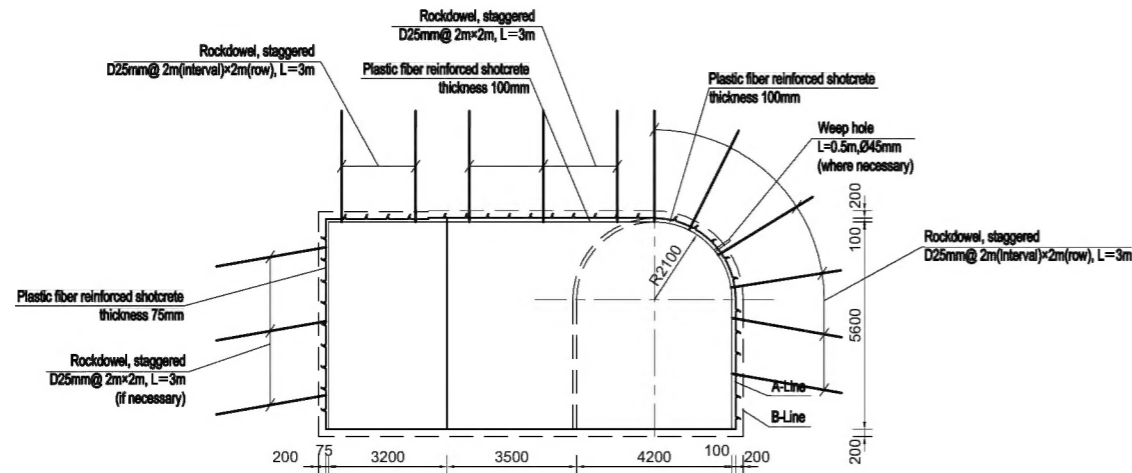
SECTION 2-2

SCALE 1:100



SECTION 3-3

SCALE 1:100



TUNNEL SUPPORT PATTERN

Support pattern	Class I	Class II	Class III	Class IV	Class V
Rock mass quality	Q>40	10<Q<40	4<Q<10	1<Q<4	Q<1
Rock dowel	Spot bolting D25, L=3m (where necessary)	Pattern bolting D25@2.5m, L=3m (in tunnel roof)	Pattern bolting D25@2.0m, L=3m (alternative)	Pattern bolting D25@1.5m, L=3m (alternative)	Pattern bolting D25@1.0m, L=3m (alternative)
Shotcrete	-	T=50mm(PFRS)	T=75mm(PFRS)	T=120mm(PFRS)	T=160mm(PFRS)
Steel support	-	-	-	MB150@1.0m or (lattice girder @1m) (where necessary)	MB150@1.0m or (lattice girder @1.0m)
Supplementary support	-	-	-	Forepoling grouted dowel, D25@0.4m, L=6m (where necessary)	Forepoling grouted dowel, D25@0.4m, L=6m
Unsupported span for shotcrete(m)	-	9	2	1.5	0.5~1.0
Unsupported span for rock dowel(m)	-	6	4	3	0.5~1.0
Unsupported span for steel support(m)	-	-	-	0.5~1.0	0.5~1.0
Excavation span(m)	3	3	2	1.0~1.5	0.5~1.0
Excavation method	Blasting/Mechanically				Mechanically

1:100 0 1 2 3 4 5m

NOTE

- 1.The coordinates, chainages & elevations are measured in meters, all dimensions are in millimeters unless otherwise stated.
2. Other notes see sheet 1 & sheet 2.

REFERENCE DRAWINGS





UT1-C-150-CVL-DG-43002	Surrounding Rock Stability Calculation of Adit NO.3
UT1-C-000-CVL-DG-40001	Detailed Design Drawing of Excavation and Support for Underground Cavern
UT1-C-845-CVL-DG-70005	Layout Drawing of Monitoring for Adit No.3
UT1-C-150-CVL-DG-43009	Drawing of construction adit NO.3 plugging

SYMBOL AND LEGEND

FOR CONSTRUCTION

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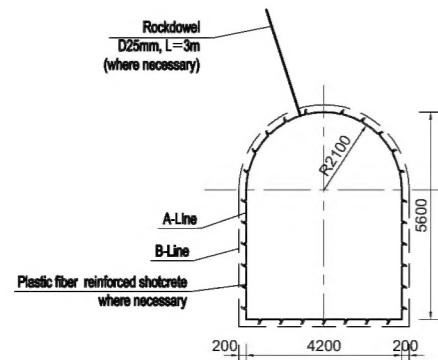
02	25.MAY.2022	AS RN-0054	DONG Z.Z.	Lei Y.G.	Han J.B.
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REV. NO.	DATE	DESCRIPTION	DRAWN	CHKD.	APPD.

PROJECT TITLE		
Upper Trishuli-1 HEP (216MW)		
OWNER		
 NATIONAL WATER AND ENERGY DEVELOPMENT CORPORATION		
OWNER'S ENGINEER		
 		
CONTRACTOR		
		
DRAWING TITLE		
EXCAVATION AND INITIAL SUPPORT DRAWINGS OF ADIT NO.3 (3/5)		
DRAWING NUMBER	SHEET NO.	REV. NO.
UT1-C-150-CVL-DG-43004-2	3 OF 5	02

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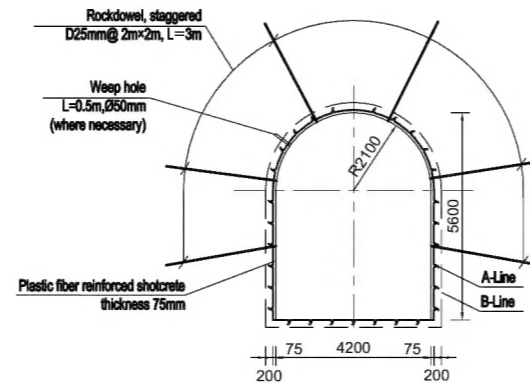
SUPPORT TYPE A OF ROCK CLASS I

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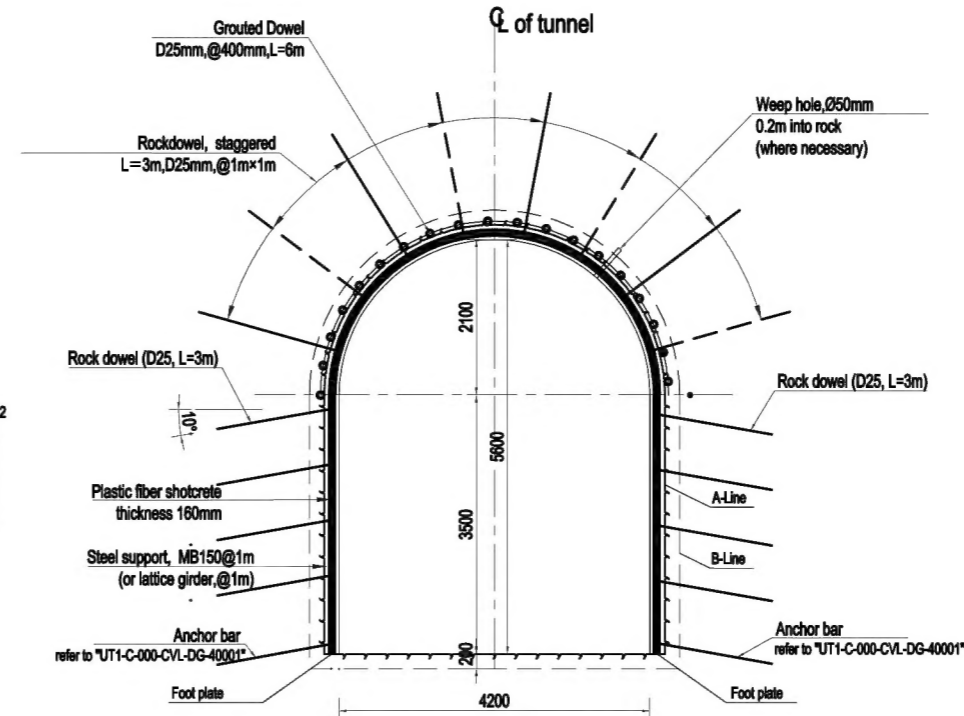
SUPPORT TYPE C OF ROCK CLASS III

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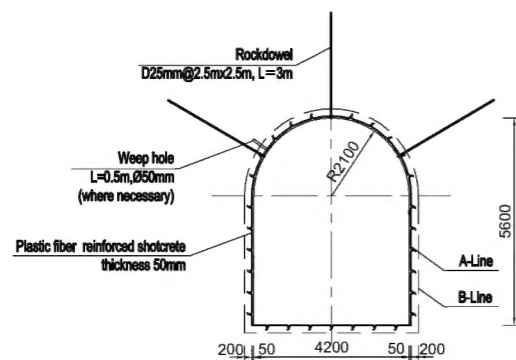
ACROSS SECTION OF FOREPOLING

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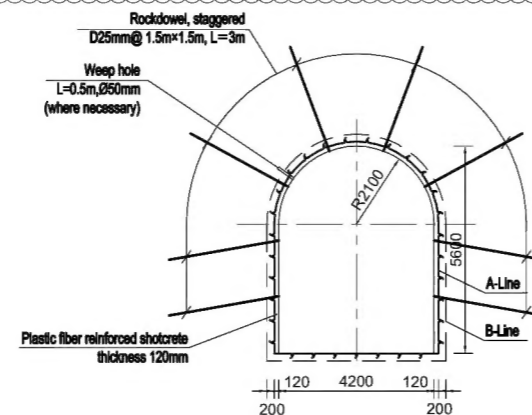
SUPPORT TYPE B OF ROCK CLASS II

SCALE 1:100



SUPPORT TYPE D OF ROCK CLASS IV

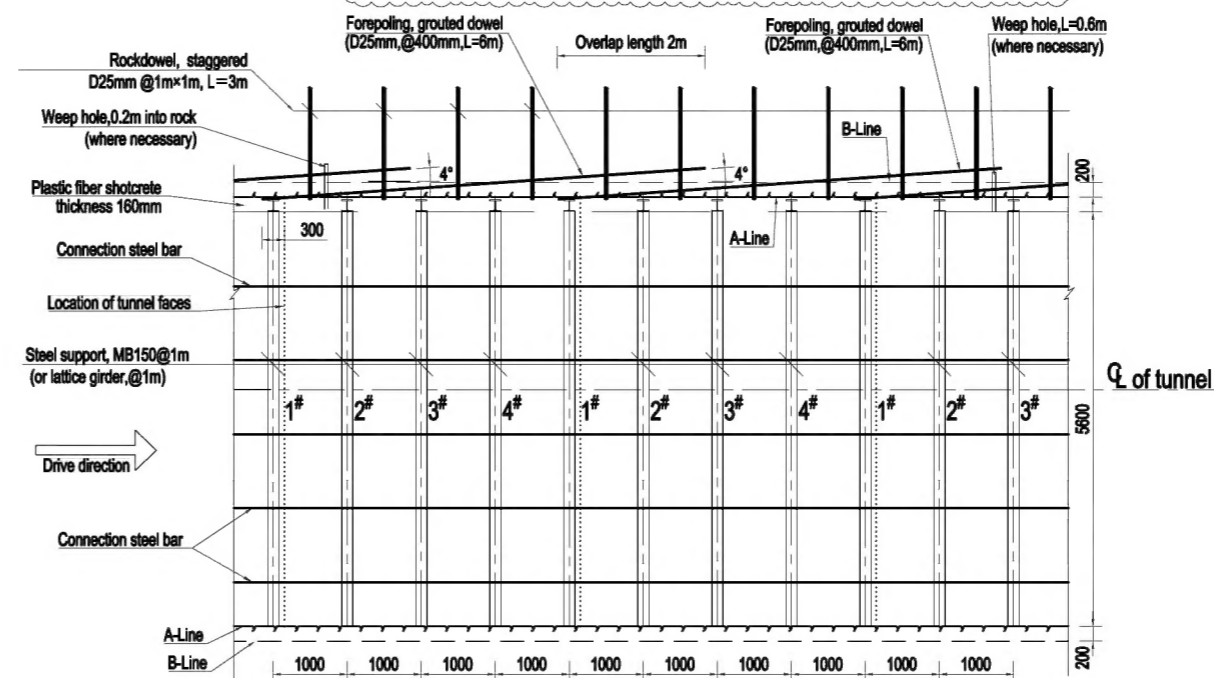
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LONGITUDINAL PROFILE OF FOREPOLING

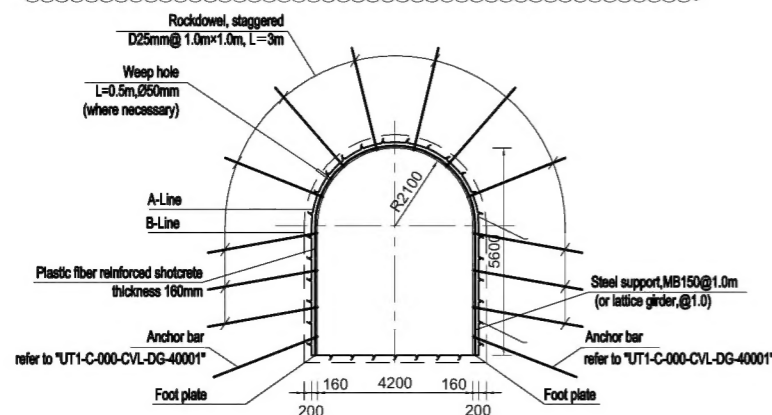
Applied to class V

SCALE 1:50



SUPPORT TYPE E OF ROCK CLASS V

SCALE 1:100



NOTE

1. The coordinates, chainages & elevations are measured in meters, all dimensions are in millimeters unless otherwise stated.
2. The canopy forepoling is mainly used in the tunnel section with poor surrounding rock geology, which should be used together with dowel and steel support (or lattice girder), and the spacing of dowel should be consistent with that of steel support.
3. The steel support (or lattice girder) to rock class IV is subjected to the exposed geological condition.
4. The excavation profile may need to be adjusted to a "saw-tooth profile" and size of ribs/girders may also be adjusted.
5. Other notes see sheet 1 & sheet 2.

REFERENCE DRAWINGS

UT1-C-150-CVL-DG-43002	Surrounding Rock Stability Calculation of Adit No.3
UT1-C-000-CVL-DG-40001	Detailed Design Drawing of Excavation and Support for Underground
UT1-C-845-CVL-DG-70005	Layout Drawing of Monitoring for Adit No.3
UT1-C-150-CVL-DG-43009	Drawing of construction adit NO.3 plugging

SYMBOL AND LEGEND

FOR CONSTRUCTION

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PROJECT TITLE
Upper Trishuli-1 HEP (216MW)

OWNER
NWEDC
NATURAL WATER AND ENERGY DEVELOPMENT CO. (P) LTD.

OWNER'S ENGINEER
TRACTEBEL
CHINA

CONTRACTOR
DOOSAN Enerbility

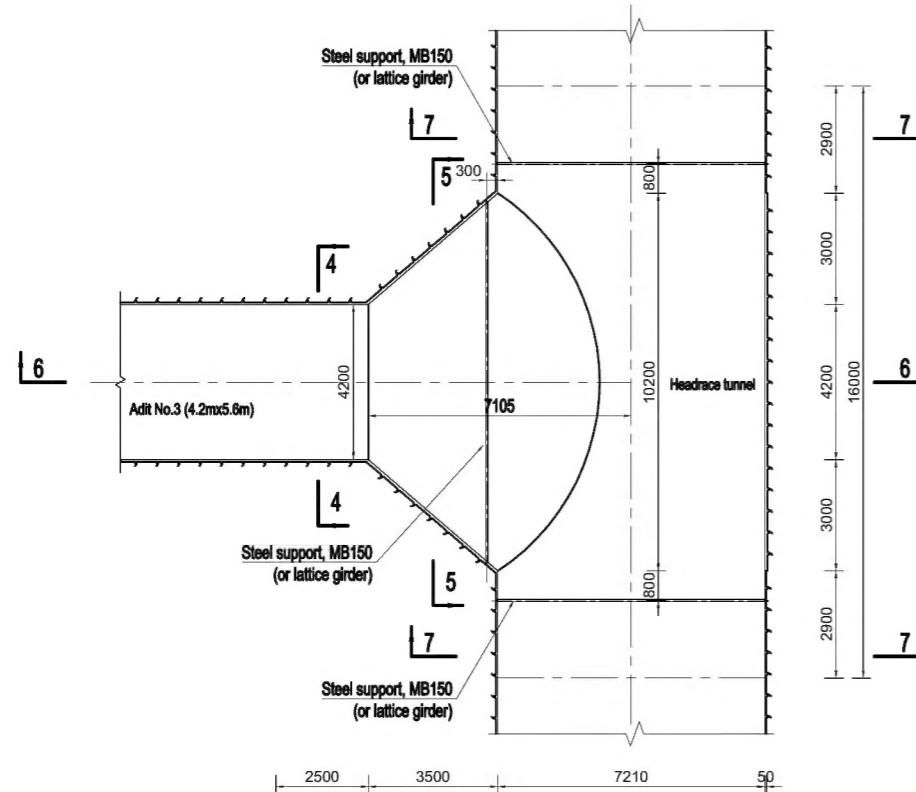
DRAWING TITLE
EXCAVATION AND INITIAL SUPPORT DRAWINGS OF ADIT NO.3 (4/5)

DRAWING NUMBER	SHEET NO.	REV. NO.
UT1-C-150-CVL-DG-43004-4	4 OF 5	02

A1 (594 x 841 MM) 1

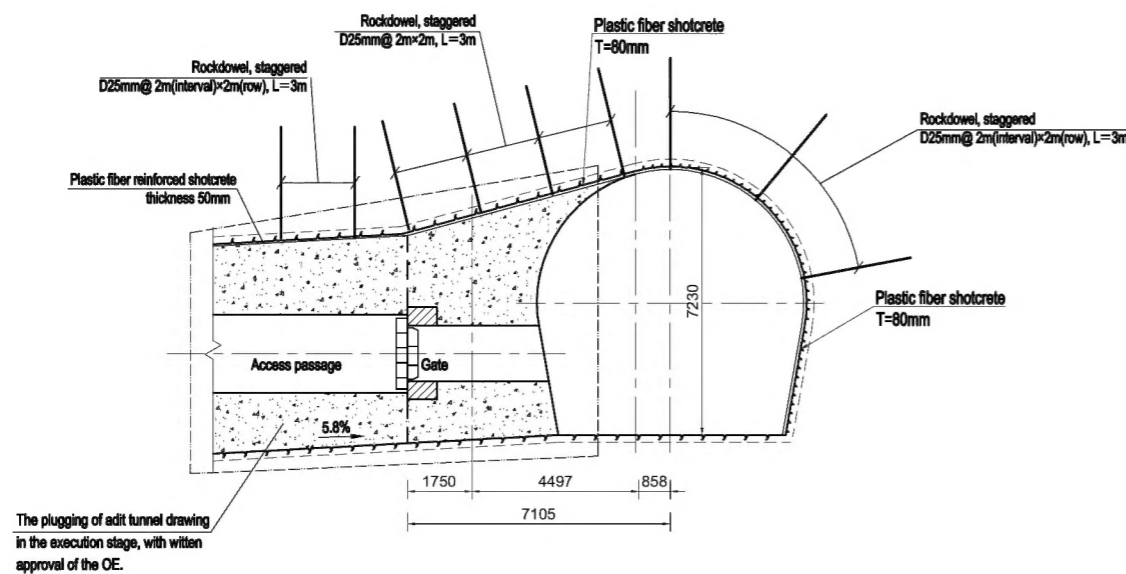
PLAN OF BRANCH OF ADIT NO.3& HEADRACE TUNNEL

SCALE 1:100



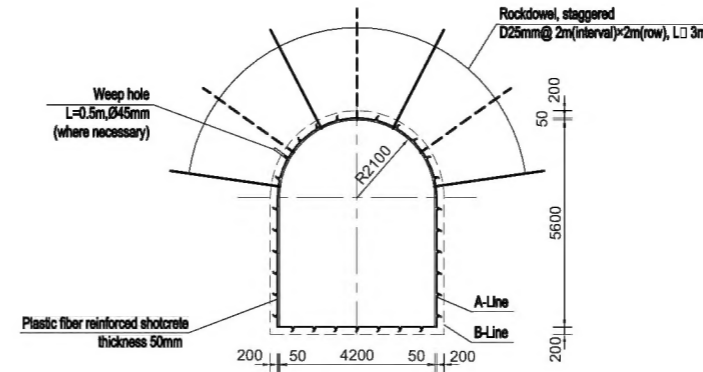
SECTION 6-6

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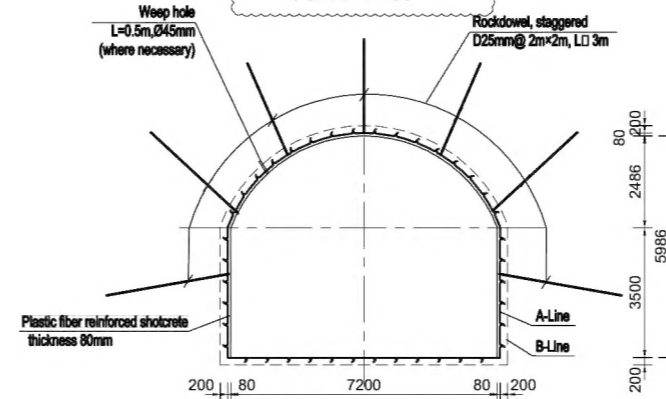
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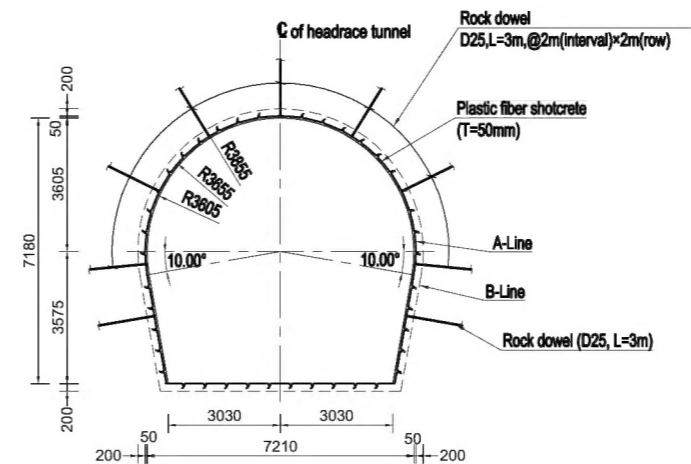
SECTION 5-5

SCALE 1:100



SECTION 7-7

SCALE 1:100



1:100 0 1 2 3 4 5m

NOTE

- 1.The coordinates, chainages & elevations are measured in meters, all dimensions are in millimeters unless otherwise stated.
2. Other notes see sheet 1 & sheet 2.

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UT1-C-150-CVL-DG-43009	Drawing of construction adit NO.3 plugging

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PROJECT TITLE		
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OWNER'S ENGINEER		
		
CONTRACTOR		
		
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DRAWING NUMBER	SHEET NO.	REV. NO.
UT1-C-150-CVL-DG-43004-5	5 OF 5	02

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